H_2 PLASMA TREATMENT

ABSTRACT

Electronic devices are constructed by a method that includes forming a first conductive layer in an opening in a multilayer dielectric structure supported by a substrate, forming a core conductive layer on the first conductive layer, subjecting the core conductive layer to a H_2 plasma treatment, and depositing a capping adhesion/barrier layer on the core conductive layer after the H_2 plasma treatment. The multilayer dielectric structure provides an insulating layer for around the core conducting layer and at least one sacrificial layer for processing. The H_2 plasma treatment removes unwanted oxide from the surface region of the core conducting layer such that the interface between the core conducting layer and the capping adhesion/barrier is substantially free of oxides. In an embodiment, the core conducting layer is copper with a titanium nitride or zirconium capping adhesion/barrier layer.